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EXAMINER

CHOW, CHIH CHING

ART UNIT

PAPER NUMBER

2122

DATE MAILED: 10/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/023,075

Applicant(s)

GUSIKHIN ET AL.

Examiner

Chih-Ching Chow

Art Unit

2122

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is responsive to the application filed on December 13, 2001.
2. The priority date considered for this application is December 13, 2001.
3. Claims 1-24 have been examined.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 16 is rejected since "said VRML database is partially comprised of fiducials" is not clearly defined. In the specification, applicant describes 'fiducial information' as the following: "The VRML library database 16 may also contain fiducial information. The fiducial information is included in the database 16 to provide a PCB assembler with a common point to serve as a reference by which other components are assembled, much like the coordinate (0,0) typically serves as the origin for a grid and other points, such as (3,4), can be located once this origin is established." - examiner assumes the 'fiducials' are the coordinate references (as grids on the coordinates) for a location on a plane.

6. Claim 17 is rejected since "said VRML database is partially comprised of reference designators" is not clearly defined. In the specification, applicant describes 'reference' as the following: "The fiducial information is included in the database 16 to provide a PCB assembler with a common point to serve as a reference by which other components are assembled, much like the coordinate (0,0) typically serves as the origin for a grid and other points, such as (3,4), can be located once this origin is established." - examiner assumes the 'reference designators' are the coordinate references (as grids on the coordinates) for a location on a plane.

7. Claim 18 is rejected since "said VRML database is partially comprised of 2-D coordinate location information for components to be

assembled on said PCB" is not clearly defined. In the specification, applicant describes 'reference' as the following: "The fiducial information is included in the database 16 to provide a PCB assembler with a common point to serve as a reference by which other components are assembled, much like the coordinate (0,0) typically serves as the origin for a grid and other points, such as (3,4), can be located once this origin is established." - examiner assumes the '2-D coordinate location information' are the coordinate references (as grids on the coordinates) for a location on a plane.

8. Claim 19 is rejected since "said VRML database is partially comprised of rotation information for components be assembled on said PCB" is not clearly defined. In the specification, applicant describes 'reference' as the following: "The fiducial information is included in the database 16 to provide a PCB assembler with a common point to serve as a reference by which other components are assembled, much like the coordinate (0,0) typically serves as the origin for a grid and other points, such as (3,4), can be located once this origin is established. In addition, this database 16 can contain the coordinates of every component's location and rotation on the PCB" - examiner assumes the 'rotation information' are the coordinate references (as grids on the coordinates) for a location on a plane.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-4, 23, and 24 are rejected under 35 U.S.C. 102(b) as being unpatentable over the admitted prior art of 'Smart Virtual Prototypes: Distributed 3D Product Simulators for Web Based Environments', Proceedings of the fifth symposium in Virtual Reality Modeling Language, February, 2000; by Marko Salmela, Harri Kyllönen (herein after "Salmela").

CLAIM

1. A virtual reality modeling language (VRML) interface device comprising:

(a) a World Wide Web browser wherein said browser includes a VRML viewer plug-in;

(b) at least one external database storing first image files wherein said plurality first image files are created on differing software platforms; and

(c) a VRML interface software program installed said browser wherein said program compiles visual information from said plurality of first image files and creates second image file based on said plurality of first image files wherein said second image file can be viewed independent computer platform.

Salmela

Salmela's paper teaches a technology that enables development of functional and interactive 3D product design models for **web based environments**. On page 88, under 2.2, "We found a number of system that enabled development of shared virtual environments based on **VRML plug-ins** and a server.", under 2.3, "The 3D-visualization model is represented using **VRML prototype nodes**".

For item a, in Salmela, page 89, first paragraph, "The External Authoring Interface (EAI) is required to enable interaction between the **VRML model** and the activator applet in case a **VRML plug-in viewer** is used."

For item b, on page 90, 6th paragraph, "Virtual components can be used to implement heterogeneous prototypes, which may consist of several simulation models running on **different platforms**." This implies there are *at least one external database* storing different file components (*image files*).

For item c, on page 88, under 'Platform independence' section, "A networked environment may contain a divers range of workstations with different operating systems. It should, nevertheless, **be possible to download and use the same tools in any workstation**." And further on page 90, 6th paragraph, "Virtual components (*images*) can be used to implement

heterogeneous prototypes, which may consist of several simulation models running on **different platforms**." This paragraph implies that different image files can be created and viewed from different computer platforms via a VRML interface software program.

2. The device as recited claim 1 further comprising a database interface communicate between said browser and said least one external database.

For the feature of claim 1 see claim 1 rejection. See page 88, under 'Simulation of user interface logic', "Future consumer electronics devices may have multimodal user interfaces in order to use the complicated functionality provided by the devices." Also on page 90, Figure 3, a **'Remote Simulation Engine Interface'** communicates between a browser and a server.

3. The device as recited claim 2 wherein said database interface is common gateway interface (CGI).

For the feature of claim 2 see claim 2 rejection. It is a well-known skill in the art for a Web server to pass a Web user's request data through a Common Gateway Interface.

4. The device as recited claim 2 wherein said database interface Java Applets routine.

For the feature of claim 2 see claim 2 rejection. On page 88, under 2.3 last paragraph, "Virtual components are implemented as Java classes and objects. The prototype activator is implemented as a **Java applet** because it is to be executed in a Java-compatible web browser." Also see Figure 1 and Figure 3, **Java Applet routine** works as database interface.

23. A method to generate a second VRML image file based on a plurality of first image files creates from differing software platforms comprising the steps of:

Same as claim 1 rejection.

assembling at least one external database that contains said plurality of first image files created from differing software platforms;

loading a VRML interface software program onto a World Wide Web (WWW) browser wherein said program compiles visual information from said plurality of first image files and creates a second VRML image file based on said plurality of first image files wherein said VRML image file can be viewed independent of computer platform;

accessing WWW server by using said WWW browser and using a database interface to access said second image file.

24. The method as recited in claim 23 further comprising step of viewing said second image file by utilizing said WWW browser wherein a VRML viewer plug-in is loaded onto said browser.

Same as claim 1 rejection.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over

'Smart Virtual Prototypes: Distributed 3D Product Simulators for Web Based

Environments', Proceedings of the fifth symposium in Virtual Reality Modeling

Language, February, 2000; by Marko Salmela, Harri Kyllönen (hereinafter

"Salmela"); in view of US 2002/0041287 by Peter G. Engeldrum et al. (hereinafter

"Engeldrum").

CLAIM

7. The device as recited claim 1 wherein said second image files are composed JPEG format that can be viewed independent of computer platform.

Salmela / Engeldrum

For the feature of claim 1 see claim 1 rejection. Salmela teaches the technology that enables development using VRML for web based environment but does not teach the 'JPEG' specifically. However Engeldrum teaches 'JPEG' in an analogous art. In Engeldrum, paragraph 42, "image 52 as then displayed on display 22 may be a more accurate color representation of a reference or author image, image 56 than may otherwise be achieved. Image 56 may be corrected from any conventional format including but not limited to rendering formats such as PCL and PDF, image formats such as JPEG 2000, AVI, MPEG 2, MPEG3, MPEG4, Quick time, Real Media, VRML, ART,

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WMF, FPX, BMP, PCX, TIFF, GIF, flash, or postscript." Further more, an example is given in Powers, "Uses the given image file (GIF or JPEG) as the tiled texture for the sky above the world."

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Salema's disclosure of the VRML technology by the JPEG and GIF format taught by Engeldrum, for the purpose of displaying and correcting the JPEG and GIF image format files (see Engeldrum, paragraph 42).

8. The device as recited claim 1 wherein said second image files are composed in a GIF format that can be viewed independent computer platform.

Same as claim 7 rejection.

13. Claims 5-6, 9-15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over 'Smart Virtual Prototypes: Distributed 3D Product Simulators for Web Based Environments', Proceedings of the fifth symposium in Virtual Reality Modeling Language, February, 2000; by Marko Salmela, Harri Kyllönen (hereinafter "Salmela"); in view of U.S. Patent no. 6, 665,854 by Fujiwara et al. (hereinafter "Fujiwara").

CLAIM

5. The device as recited claim 1 wherein said plurality first image files are composed in a Gerber format.

Salmela / Fujiwara

For the feature of claim 1 see claim 1 rejection. Gerber format is a design choice for a CAD tool. In Salema's disclosure, it does not limit to a certain tool, any CAD produced image model would apply. See page 92, under 4.6, 2nd paragraph, "a CAD model is converted to the VRML-based geometry model that is a static model". Salmela teaches the technology that enables development using VRML for web based environment but does not teach the 'Gerber format' specifically. However Fujiwara teaches 'Gerber format' in an analogous art. In Fujiwara, column 10, lines 40-45, "The CAD data also includes information about detailed shape of the circuit board, such as actual shape or perforations, as variable-length data. This variable-length data can be represented by using any shape representation format, generally in a Gerber format."

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Salema's disclosure of the VRML technology by 'Gerber format' taught by Fujiwara, for the purpose of representing a shape of a circuit board (see Fujiwara, column 10, lines 44-45).

6. The device as recited claim 1 wherein said plurality image files are composed in a CAD format.

Same as claim 5 rejection.

9. A virtual reality modeling language (VRML) interface system for printed circuit board (PCB) manufacturing comprising:

Salmela's paper teaches a technology that enables development of functional and interactive 3D product design models for **web based environments**. However Salmela does not mention that it can be used for PCB manufacturing specifically. However Fujiwara teaches it in an analogous prior art. In Fujiwara, column 18, lines 56-63, "Based on the 3D graphics data generated in the above-described manner, an **image** is displayed on the check result output unit 9 (step S1509). The image displayed in 3D based on the **circuit board** data "BRD0011" is as shown in (d) of FIG. 20. The format of the 3D graphics data is determined in compliance with the check result output unit 9. Standard data formats include **VRML**, **STL**, and **Open GL**, which can be applied to commercially-available tools for carrying out the processing of the check result output unit 9."

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Salema's disclosure of the VRML technology by using the 'Gerber format' taught by Fujiwara, for the purpose of aiding the circuit design (see Fujiwara, Abstract, last sentence).

(a) a World Wide Web browser wherein said browser includes a VRML viewer plug-in;

(b) at least one external database storing plurality first image files

For items a, b, and c see claim 1 rejection.

storing plurality first image files
wherein said plurality of first image
files are created on differing software
platforms;

(c) a VRML interface software program
installed onto said browser wherein said
program compiles visual information
from said plurality of first image files
and creates a second image file based on
said plurality of first image files
wherein said second image file can be
viewed independent of computer
platform; and

(d) a printed circuit board (PCB)
assembly facility wherein assembly
operators assemble PCBs from said
second image file.

For item d, see claim 9 rejection above.

10. The system as recited claim 9
further comprising a database interface
to communicate between said browser
said at least one external database.

For the feature of claim 9 see claim 9
rejection. For the rest of the feature
see claim 2 rejection.

11. The system as recited claim 10
wherein said database interface is a
common gateway interface (CGI).

For the feature of claim 10 see claim 10
rejection. For the rest of the feature
see claim 3 rejection.

12. The system as recited in claim 10
wherein said database interface is a
Java Applets routine.

For the feature of claim 10 see claim 10
rejection. For the rest of the feature
see claim 4 rejection.

13. The system as recited in claim 9
wherein said plurality of first image
files is partially comprised of Gerber
images of PCB artwork.

For the feature of claim 9 see claim 9
rejection. For the rest of the feature
see claim 5 rejection.

14. The system as recited in claim 9 wherein said plurality of first image files is partially comprised of CAD images of electronic components used in assembling said PCB.

For the feature of claim 9 see claim 9 rejection. For the rest of the feature see claim 6 rejection.

15. The system as recited in claim 9 wherein said plurality of first image files is partially comprised of a VRML database.

For the feature of claim 9 see claim 9 rejection. In Fujiwara, claim 1, "the computer system including a display coupled to a processor and database, the database including predefined three-dimensional objects, the computer system coupled to a network, the method comprising receiving a first symbolic map, wherein the symbolic map (*image*) includes symbols and row and column **adjacencies among the symbols**; **parsing the first symbolic map (*first image files*) for one or more symbols associated with a predefined three-dimensional object (*plurality of first image files*)**; retrieving a predefined three-dimensional object associated with the symbol from the database, wherein two or more three-dimensional objects are each part of a common object (*plurality of the first image files*); and rendering a display of a three-dimensional world using one or more of the predefined three-dimensional objects, wherein adjacencies in the first symbolic map are reproduced using the predefined three-dimensional objects in the display of the three-dimensional world." And again, in Fujiwara, column 18, lines 56-

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63, "The format of the 3D graphics data is determined in compliance with the check result output unit 9. Standard data formats include **VRML**, STL, and Open GL, which can be applied to commercially-available tools for carrying out the processing of the check result output unit 9." - Fujiwara implies that his art comprised of a VRML database. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Salema's disclosure of the VRML technology by using the image processing taught by Fujiwara, for the purpose of applying commercially-available tools for carrying out check result output (see Fujiwara column 18, lines 64-65).

20. The system as recited in claim 15 wherein said VRML database is partially comprised of package type information for components to be assembled on said PCB.

For the feature of claim 15 see claim 15 rejection. For the rest of the feature in claim 20 see Salmela, under 4.6, "The tool utilizes specific **VRML prototype nodes from a component library (VRML database)** to reconstruct the VRML model..... It is possible to automate the routine phases that always repeat, such as code generation and compiling, creating an HTML document and creating the interfaces between models. For instance, since the VRML model is reconstructed by suing **typed** prototype notes (*package type information*), it is possible to automatically generate an interface model that connects the VRML

model to the logical model through the interactors." Salmela teaches the features of claim 20, however claim 20 inherited features of claim 15 which are taught by Fujiwara.

14. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over 'Smart Virtual Prototypes: Distributed 3D Product Simulators for Web Based Environments', Proceedings of the fifth symposium in Virtual Reality Modeling Language, February, 2000; by Marko Salmela, Harri Kyllönen (hereinafter "Salmela"); in view of. U.S. Patent no. 6, 665,854 by Fujiwara et al. (hereinafter "Fujiwara"), and further in view of U.S. Patent no. 6,362,817 by Albert R. Powers (hereinafter "Powers").

CLAIM

16. The system as recited in claim 15 wherein said VRML database is partially comprised of fiducials.

Salmela / Fujiwara / Powers

For the feature of claim 15 see claim 15 rejection. Salmela and Fujiwara teach the technology that enables development using VRML for web based environment but does not teach the 'fiducials' specifically. However Powers teaches 'fiducials' in an analogous art. In Powers, column 8, lines 18-29, "These modules make sure that **as blocks move they still display in the proper order** (i.e., whether they are "in front of" or "behind") with respect to other objects even though the moving objects do not have their original **specified grid position** (*fiducials, coordinates to specify a location on a plane*) according to the symbolic map... An advantage of the invention is that the ordering of **objects on a grid**--a direct result of the structure of the symbolic map--allows very fast computation of sorting, clipping and rendering objects." It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Salmela and Fujiwara's disclosure of the VRML technology by 'Fiducials' taught by Powers, for the purpose of allowing movement of a block object (see Powers, column 8, line 15).

17. The system as recited in claim 15 wherein said VRML database is partially comprised of reference designators.

Same as claim 16 rejection.

18. The system as recited in claim 15

Same as claim 16 rejection.

wherein said VRML database is partially comprised of 2-D coordinate location information for components to be assembled on said PCB.

19. The system as recited in claim 15 wherein said VRML database is partially comprised of rotation information for components be assembled on said PCB. Same as claim 16 rejection.

15. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over 'Smart Virtual Prototypes: Distributed 3D Product Simulators for Web Based Environments', Proceedings of the fifth symposium in Virtual Reality Modeling Language, February, 2000; by Marko Salmela, Harri Kyllönen (hereinafter "Salmela"); in view of U.S. Patent no. 6, 665,854 by Fujiwara et al. (hereinafter "Fujiwara"), and further in view of US 2002/0041287 by Peter G. Engeldrum et al. (hereinafter "Engeldrum").

CLAIM

21. The system as recited in claim 9 wherein said second image files are composed in a JPEG format that can be viewed independent of computer platform.

22. The system as recited in claim 9 wherein said second image files are composed in a GIF format that can be viewed independent of computer platform.

Salmela / Fujiwara / Engeldrum

For the feature of claim 9 see claim 9 rejection. Salmela and Fujiwara teach the technology that enables development using VRML for web based environment but does not teach the 'JPEG' specifically. However Engeldrum teaches 'JPEG' in an analogous art, see claim 7 rejection.

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Salmela and Fujiwara's disclosure of the VRML technology by using the 'JPEG' and 'GIF' format taught by Engeldrum, for the purpose of displaying and correcting the JPEG and GIF image format files (see Engeldrum, paragraph 42).

Same as claim 21 rejection.

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Conclusion

The following summarizes the status of the claims:

35 USC § 112 (2) rejections: Claims 16-19

35 USC 102 (b) rejections: Claims 1-4

35 USC 103 rejections: Claims 5-24

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Ching Chow whose telephone number is 703-305-7205. The examiner can normally be reached on 7:00am - 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached on 703-305-4552. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chih-Ching Chow
Examiner
Art Unit 2122

CC



ANTHONY NGUYEN-BA
PRIMARY EXAMINER